a smaller number of defective pairs than is reflected in Verizon VA's distribution utilization factor.

Q. Please respond to AT&T/WorldCom's contention that Verizon VA's distribution utilization factor reflects facilities reserved for future growth whose costs should not be borne by current ratepayers? [AT&T/WorldCom Rebuttal Panel at 46.]

A. As explained above, this argument misrepresents the purpose of spare capacity and advocates an inefficient network. To begin with, distribution utilization is driven primarily by factors that are unrelated to growth. For example, as explained by the Verizon Panel Direct, one of the primary determinants of distribution utilization is customers' current (or foreseeable) need for second lines.[99/] To accommodate orders for additional lines, it is far more efficient and cost-effective to build a network that permits a carrier to complete such orders without having to rearrange or install distribution facilities each time. Based on decades of operating experience, industry standard engineering guidelines recognize that the most efficient way to meet this need is to assign two distribution pairs per living unit in residential areas and up to five distribution pairs per customer location in small business districts.[100/] As explained above, spare distribution facilities are critical to serve current and immediately

---

[99/] AT&T/WorldCom Direct Cost Panel at 114-15.

[100/] Verizon Engineering Guidelines (1998) ("Engineering Guidelines"), Attachment K at 35.

foreseeable demand and provide quality service, as required by the Virginia State Corporation Commission and according to industry standards. Accordingly, the cost of such spare capacity clearly is a current cost of operating the network.

Q. On what basis do AT&T/WorldCom argue that fewer distribution pairs may be used to service concrete, foreseeable demand?

A. Based on the assumption of a "scorched-node" rebuilt network, the AT&T/WorldCom Rebuttal Panel argues that Verizon VA can precisely predict the amount of demand that will arise in particular areas of the network and build distribution facilities to serve just such demand. Thus, based on the mere speculation that it would be possible to use fewer distribution pairs in areas where demand "has been stable for a long time," AT&T/WorldCom suggest that, in the rebuilt network, fewer pairs should be built in such areas.[101/] However, even assuming the absurdity of a fully rebuilt network, it is completely unrealistic to expect that it would be possible to predict the demand for additional lines in individual neighborhoods based simply on past experience in those neighborhoods. In the real world, neighborhoods demand changes over time as the needs of existing residents change and as new residents move in to replace former residents. To assume that demand in such a small subset of the network can be predicted solely based on past experience entirely ignores

---

[101/] AT&T/WorldCom Rebuttal Panel at 47.

this reality. Consequently, providing fewer distribution pairs in a neighborhood in which demand for second lines had been stagnant for some period of time is likely to produce service delays over time as demand in the neighborhood fluctuates. Following the approach proposed by AT&T/WorldCom would inevitably prevent Verizon VA from fulfilling the service quality standards imposed by the Virginia State Corporation Commission.

Moreover, the level of perfect omniscience that would be required to tailor distribution design to meet "only the anticipated needs of today's demand"[102/] simply is not attainable. As WorldCom itself alleges in the Rebuttal Testimony of its witness, Donato Greico, "[I]t is impossible for any party to predict with complete accuracy what will happen in the future. . . . [R]esponse [may be] much less significant than anticipated."[103/] In the real world that constrains even the forward-looking network, carriers are forced to build networks in the absence of the perfect knowledge that AT&T/WorldCom hypothesize. Verizon VA's utilization rates thus take into account the amount of spare that is reasonably necessary to ensure that the network can respond to a wide range of current consumer and operational requirements.

102/ *Id.* at 47.
103/ Greico Rebuttal at 4.

Q. Does AT&T/WorldCom's proposed distribution utilization rate properly account for customer churn?

A. No. With respect to churn, as noted above, the AT&T/WorldCom Rebuttal Panel advocates treating pairs that are "idle" but dedicated due to churn as "working" pairs.[104/] As previously explained, the fact that Verizon engineers might treat such pairs as unavailable in the short term so that they are not reassigned to other living units has no bearing on whether such pairs should be treated as working when calculating UNE rates. Engineers consider those pairs to be unavailable to avoid the expense of reassigning those pairs from temporarily vacant customer locations only to have to reassign other pairs to those locations when new occupants move in. Of course, if it truly is necessary to make such reassignments to meet existing demand pending the installation of relief capacity, the reassignments would be made. However, regardless of how engineers treat these pairs for administrative purposes, the fact remains that, so long as a customer location is vacant, the distribution pairs assigned to the premises are not producing revenue. That being the case, it is appropriate to recover the costs of those pairs through rates charged to other customers.

[104/] We note that AT&T/WorldCom's use of the term "idle assigned" in the context of distribution pairs is anomalous, given that the term generally is used in connection with feeder cable, not distribution — another example of their lack of experience with the local network.

Q. Do AT&T/WorldCom's proposed distribution utilization factors properly account for breakage?

A. No. Because of breakage, each time a cable is installed, there are additional uncommitted pairs, and thus the denominator of the utilization factor increases. If AT&T/WorldCom acknowledged the impact of breakage, their distribution fill rate would necessarily be reduced.

Q. With respect to distribution cable, is there anything to the AT&T/WorldCom Rebuttal Panel's argument that Verizon VA's effort to install sufficient spare to meet demand is inefficient? [AT&T/WorldCom Rebuttal Panel at 50-51.]

A. No. As explained by the Verizon Panel Direct, it is clearly much more efficient to install additional pairs when the distribution cable initially is installed rather than incur redundant costs, such as digging trenches, placing cable, and removing obstacles later to meet demand. Moreover, the additional costs involved in provisioning distribution cables with spare capacity is a far smaller percentage than the percentage of spare that is provisioned. For example, as shown in the chart below, an increase in capacity of 100%, provisioning a 100 pair cable instead of a 50 pair cable, increases the investment by only 19%.

TABLE 3

Loaded Investment, 2001 level						
				Distribution		
				A	B	
	CABLE_TYPE		ID	SLOPE_1	INTERCEPT_1	
	7 AE Cable		AER	$ 0.0262	$ 4.2177	
	8 BU Cable		BUR	$ 0.0384	$ 8.3004	
	9 UG Cable		UND	$ 0.0246	$ 3.6848	
cable size	50	100	200	300	400	600
cable length	5000	5000	5000	5000	5000	5000
fixed	$ 8.30	$ 8.30	$ 8.30	$ 8.30	$ 8.30	$ 8.30
varialbe	$ 0.0384	$ 0.0384	$ 0.0384	$ 0.0384	$ 0.0384	$ 0.0384
total fixed investment	$41,502	$ 41,502	$ 41,502	$ 41,502	$ 41,502	$ 41,502
total per pair, variable investment	$ 9,598	$ 19,195	$ 38,390	$ 57,585	$ 76,780	$ 115,170
total investment	$51,100	$ 60,697	$ 79,892	$ 99,087	$ 118,282	$ 156,672
INCREASE IN CAPACITY		100%	100%	50%	33%	50%
INCREASE IN INVESTMENT		19%	32%	24%	19%	32%

Q. Should the Commission adjust the distribution utilization rate as recommended by AT&T/WorldCom?

A. No. The distribution utilization rate of **[VERIZON PROPRIETARY BEGINS] [VERIZON PROPRIETARY ENDS]** used by Verizon VA is based on its actual Virginia experience operating the network, properly accounts for churn, breakage, and demand under a price caps regime, and allows Verizon VA to meet the service obligations imposed by the Virginia State Corporation Commission. Moreover, AT&T/WorldCom do not know of any LEC anywhere, including either petitioner, that has a 60% distribution utilization rate.[105/]

[105/] AT&T/WorldCom Response to Verizon VA 13-71. (Attachment A.)

2. Utilization of Copper Feeder

Q. What utilization rate do AT&T/WorldCom propose for the utilization of copper feeder?

A. AT&T/WorldCom propose a utilization rate of 80% for copper feeder, rejecting Verizon VA's **[VERIZON PROPRIETARY BEGINS] [END VERIZON PROPRIETARY ENDS]** rate. AT&T/WorldCom attempt to justify this proposed rate on the ground that current ratepayers should not bear the cost of spare capacity needed for future growth.

Q. Is AT&T/WorldCom's proposed utilization rate reasonable for copper feeder facilities?

A. No. AT&T/WorldCom's proposed 80% utilization rate for copper feeder facilities fails to provide sufficient spare capacity to accommodate administrative and maintenance tasks, or even near-term demand growth, efficiently. Moreover, such a high utilization rate ignores the effects of breakage and churn on utilization. The net result of an 80% utilization rate would be a substantial reduction in service quality and responsiveness, as well as substantially higher operating expenses; the latter would more than offset any cost savings arising from the reduction in spare capacity.

As explained in the Verizon Panel Direct, copper feeder facilities require a minimum margin of spare capacity to allow for efficient operation, administration, maintenance, and management. Verizon VA's

operating experience has established this margin at 10% or 15% of total installed capacity, depending on whether the feeder route is interfaced (*i.e.*, whether there is an SAI or FDI on the route). Without this margin of spare capacity, it is far more difficult and costly to maintain continuous, quality service. In addition, when installing or adding to feeder facilities, it is most efficient to install sufficient additional spare capacity to accommodate three to five years of growth. Assuming a 3% annual growth rate, this requires leaving as spare an additional 9% to 15% of total capacity.

Though the combination of the administrative spare margin and the spare capacity required for future growth produce a target copper feeder size for planning purposes, breakage further limits the feeder utilization rate that a forward-looking network can achieve in practice, as explained in the Verizon Panel Direct.[106/] Indeed, AT&T/WorldCom witness Riolo himself recognizes the impact of breakage on utilization, admitting that "it is possible that a [cable] size larger than the actual pair requirement will be selected to satisfy a requirement, and the difference may be considered *additional* spare capacity."[107/] Though spare capacity due to breakage may ultimately be used to meet future demand — a fact that AT&T/WorldCom make much of — such spare capacity produces lower

---

[106/] Panel Direct at 104-05.

[107/] AT&T/WorldCom's Response to VZ-VA 10-2 (emphasis added). (Attachment A.)

utilization whenever copper feeder facilities are installed on new or existing routes. Thus, even as some uncommitted pairs are utilized in the network for the provision of service, other new uncommitted pairs are added to the network as a result of breakage whenever new cable is laid. Moreover, at times, it will be desirable to install a larger size feeder cable than is necessary to relieve a particular SAI that is nearing exhaust, in anticipation of the upcoming need to relieve other SAIs on the same route; this would take advantage of the efficiency of installing one large cable rather than bearing the costs of repeated relief jobs.

Customer churn also has an impact on copper feeder utilization. When service is discontinued at a customer location (*e.g.*, because the customer has moved), it typically is more efficient to maintain the existing connection between the feeder pair and distribution pair used to serve that customer for some period of time in anticipation of service being reactivated by the next occupant of that customer location. Such idle-assigned pairs allow Verizon VA to avoid dispatching a technician to disconnect the feeder pair and then re-connect a different feeder pair when new service is later ordered at the same customer location. If the feeder route contained only a small amount of spare capacity available for assignment, left-in pairs would have to be reassigned more quickly until relief capacity were installed, and operating costs would increase. The practice of leaving feeder pairs connected to a particular customer location

while that location is vacant is thus an efficient practice that helps save overall costs and shortens installation times for new customers.

Q. You mention the need for as much as 15% administrative spare, but AT&T/WorldCom assert that Verizon's own engineering guidelines do not refer to any minimum 15% spare margin. Please comment. [AT&T/WorldCom Rebuttal Panel at 59.]

A. Verizon's Engineering Guidelines provide that relief should be implemented whenever a route threatens to reach "critical" fill levels within the next year.[108/] Critical fill levels are in turn defined as 85% for non-interfaced plant, and 90% for interfaced plant.[109/] In other words, the guidelines are designed to ensure that the fill rate does not exceed those maximum levels; the remaining spare is the mandatory administrative spare. Indeed, notwithstanding their contention that this point is not to be found in the Engineering Guidelines, the AT&T/WorldCom Rebuttal Panel quote this precise passage in their testimony.[110/]

[108/] Engineering Guidelines at 8.

[109/] When first defining the "critical exhaust date of the route," Verizon's Engineering Guidelines state: "The trigger for the planner to analyze and provide a solution for non-interfaced plant is when that section of the feeder route will reach 85% fill within the next twelve months. Interfaced plant should be analyzed for a solution when it will reach 90% fill within the next twelve months." Engineering Guidelines at 9.

[110/] AT&T/WorldCom Rebuttal Panel at 56.

Q. Is there any merit to AT&T/WorldCom's contentions that (1) the critical exhaust date refers to the point at which utilization reaches 100%, and (2) even when an engineer evaluates a particular feeder route for relief as provided in Verizon's guidelines, "the engineer would typically not undertake relief effort but rather continue to monitor the plant until much closer to the critical exhaust date?" [AT&T/WorldCom Rebuttal Panel at 57.]

A. No. AT&T/WorldCom cite selected portions of Verizon's Engineering Guidelines that purportedly support their contentions while ignoring other portions that clearly refute those same contentions. In this case, as noted, the Engineering Guidelines plainly define the "critical exhaust date of the route" as the point at which the route will reach 85% or 90% utilization,[111/] not when the route will approach nearly 100% as AT&T/WorldCom contend.[112/] Moreover, the guidelines require that the engineer not just analyze the situation but "provide a solution" when the critical exhaust date is expected "within the next twelve months."[113/] The guidelines also encourage new investment (*i.e.*, new capacity) as a means of providing such relief. For example, where a particular feeder route is nearing critical exhaust, the guidelines provide:

> Relief jobs should favor the expenditure of Capital over Expense

---

111/ *See* Engineering Guidelines at 9.
112/ AT&T/WorldCom Rebuttal Panel at 56.
113/ *Id.*

> and minimize throws and step throws in the Network. Every engineer has the responsibility and is empowered to maximize capital (C) and removal (X) expenditures, and minimize rearrangement and repair (M and R) accounts. In this way, we maximize the return on our investment while improving the quality of service to our customers.[114/]

In other words, the engineers should take into account that installing new capacity often will be a more efficient solution to impending exhaust than repair or rearrangement.

Q. What utilization rate should the Commission adopt for copper feeder?

A. The Commission should adopt Verizon VA's rate of **[VERIZON PROPRIETARY BEGINS] [VERIZON PROPRIETARY ENDS].** AT&T/WorldCom are simply wrong in asserting that Verizon's own engineering guidelines support the notion that copper feeder facilities should be relieved only when they near 100% utilization. Verizon VA's rate reflects Verizon VA's actual experience based on efficient operation of the network and accounts for all the factors discussed above, and should not change in the forward-looking network.

3. Utilization of Fiber Strand

Q. What utilization rate do AT&T/WorldCom propose for fiber strand?

A. AT&T/WorldCom propose a utilization rate of 100% for fiber strand. In support of this proposed utilization rate, they claim that a forward-looking

---

[114/] Engineering Guidelines at 9-10.

network would utilize spare fiber strand for other services and that Verizon VA's own plans call for increasing fiber strand utilization above current levels.[115/]

Q. Is a 100% utilization rate for fiber strand reasonable for a forward-looking network?

A. Absolutely not. To begin with, it is patently absurd to believe that it is efficient, even possible, to operate a network with absolutely no margin of spare capacity for cable facilities. Spare fiber ribbons are necessary for administrative and maintenance purposes. For example, spare ribbons are needed in the event of ribbon failures. Spare also is required to stage the necessary splicing for movements and rearrangements. For example, when a new segment of cable is laid to intersect with old cable, spare ribbons from the old cable can be spliced to the new working fibers and tested before the whole system is moved over. And without such spare facilities, outages can last for many hours or even days. With such spare facilities, where a strand fails, service can be restored much more quickly using spare capacity.

Moreover, as explained in the Verizon Panel Direct, breakage has a particularly significant impact on fiber strand utilization.[116/] Indeed,

---

115/ AT&T/WorldCom Rebuttal Panel at 52.
116/ Verizon VA Recurring Cost Panel Direct Testimony at 108-11.

because the typical RT requires four working strands, and fiber sheath is manufactured in 12-strand ribbons, the typical RT will experience a 33% fiber strand utilization. Though AT&T/WorldCom witness Mr. Riolo apparently disagrees about the impact of breakage on fiber-strand utilization, he concedes that he has no experience with installation of fiber cables manufactured in 12-strand ribbons.[117/]

Q. Are AT&T/WorldCom correct in asserting that Verizon VA plans to deploy additional services such as dark fiber and DSL that will produce 100% utilization of fiber strand? [AT&T/WorldCom Rebuttal Panel at 52-53.]

A. No. The company does not anticipate that the demand for dark fiber or deployment of DSL will have any significant effect on fiber strand utilization in the foreseeable future. Among other things, as explained in the VZ-VA Panel Direct, DSL is a copper-based technology; there would be no reason that current DSL service deployment should impact fiber strand utilization. And as AT&T/WorldCom acknowledge, Verizon VA "currently does not offer any DSL service over fiber."[118/] Nor does the company have any committed plans to deploy a substantial number of integrated RTs that support the offering of DSL-based services over fiber

---

117/ AT&T/WorldCom Response to VZ VA 10-9. (Attachment A.)
118/ AT&T/WorldCom Rebuttal Panel at 52.

transport.[119/] Moreover, even if RTs extending data access services to DSL subloops were deployed in the future, the impact on fiber utilization would be uncertain and minimal at most. The specific deployment strategy would determine whether there might be a minimal increase or decrease in the fiber fill. For example, the line speed of DSL transport is directly dependent on the copper length. In many suburban and rural areas, the distribution facilities extending from the existing POTS RT locations are too long to support the higher speed DSL transport services. A service strategy including these services would require extending RTs dedicated to data services beyond the existing POTS RTs. The additional fiber required for this extension would tend to *lower*, rather than increase, overall fiber fill. Accordingly, AT&T/WorldCom's argument for increased fiber fill for DSL simply misses the mark. And, like so many other arguments in AT&T/WorldCom's Rebuttal, it is based entirely on speculation concerning future services and reflects no realistic assumptions about the forward-looking network.

AT&T/WorldCom also argue that Verizon's dark fiber offering would "undoubtedly increase Verizon's current fiber utilization."[120/] But

---

[119/] And while AT&T/WorldCom cite LiteSpan 2000 Application Guidelines to support their contention that Verizon VA expects to offer DSL over fiber, suggests that RTs should be designed so that such deployment might become possible at some point in the future; it does not suggest that such deployment in fact occur at any foreseeable point.

[120/] *Id.* at 53.

this assumes that dark fiber is or will be a growing service for which Verizon will use significant amounts of fiber strand — something that simply is not within Verizon's control, as AT&T/WorldCom seem to suggest, nor a function of Verizon VA's dark fiber "rates."[121] The extent of dark fiber that Verizon VA provides to CLECs is completely dependent on the business plans of Verizon's competitors, and AT&T/WorldCom provide no evidence to support the suggestion that such demand is growing. CLECs have other sources for fiber, aside from Verizon, as the Commission well knows. And any such demand is and will be concentrated only in urban and suburban business districts, not in all RTs. Thus, in any event, dark fiber should have little impact on the overall fiber strand utilization rate.

Q. What utilization rate should the Commission adopt for fiber strand?

A. The Commission should reject AT&T/WorldCom's unrealistic strand utilization factor, which would make it impossible for Verizon VA to meet its state regulatory obligations. The Commission should adopt Verizon VA's rate of **[VERIZON PROPRIETARY BEGINS]** **[VERIZON PROPRIETARY ENDS]** for fiber strand.

---

[121] *Id.* at 52.

4. Utilization of RT Plug-Ins

Q. What utilization factor do AT&T/WorldCom propose for RT plug-ins?

A. AT&T/WorldCom propose a utilization factor of 90%.[122/]

Q. Is this proposed utilization factor reasonable?

A. No. AT&T/WorldCom's proposed service plug-in utilization factor fails to provide a sufficient margin of spare capacity for administration, maintenance, and growth, and it fails to account for the effects of churn. Though AT&T/WorldCom acknowledge that 1.5% spare capacity should be provided for growth (assuming 3% annual line growth), they fail to account for other considerations that contribute to plug-in utilization.

As explained in the Verizon Panel Direct, an efficient network design must provide sufficient spare capacity to accommodate administrative and maintenance needs, as well as anticipated growth. In the case of service plug-ins, efficient design calls for maintaining a 10% margin of spare capacity to accommodate administration, maintenance, and related functions.[123/] In a real network, plug-in utilization is further reduced by customer churn. As discussed previously, it is more efficient to leave plug-ins assigned to a particular customer premises for some

---

[122/] *Id.* at 66.

[123/] Engineering Guidelines at 9 (referring to 90% critical exhaust for interfaced feeder facilities).

period of time after a customer vacates the premises, because the service likely will be reconnected as soon as a new tenant arrives. As with feeder cable, leaving the plug-in assigned (though idle) for a period of time allows Verizon to avoid dispatching a technician to the remote terminal to disconnect a plug-in, only to have to dispatch another technician to re-connect a plug-in when the new service is ordered at the same location.

Q. Is there any merit to AT&T/WorldCom's contention that plug-ins dedicated to vacant premises should be treated as working for purposes of calculating utilization factors? [AT&T/WorldCom Rebuttal Panel at 65.]

A. No. As explained above, the purpose of applying utilization factors is to allow for recovery of all of a carrier's costs through revenue-producing units of capacity. Idle plug-ins that are connected to vacant customer premises are not revenue-generating.

Q. Are AT&T/WorldCom correct in their assertion that Verizon VA's utilization rate would provide enough spare for 7 years of growth? [AT&T/WorldCom Rebuttal Panel at 65.]

A. This assertion is based on their refusal to recognize that spare serves critical purposes, separate and aside from growth; as explained above, spare capacity is the result of several other factors.

Q. What utilization rate should the Commission adopt for RT plug-ins?

A. When all of these factors (administrative spare, growth, and churn) are taken into account, it is clear that a forward-looking network would experience a significantly lower utilization than the 90% that AT&T/WorldCom propose. Verizon VA's proposed utilization of **[VERIZON PROPRIETARY BEGINS] [VERIZON PROPRIETARY ENDS]** represents a far more reasonable forward-looking utilization factor for RT plug-ins.

5. Utilization of RT Common Electronics

Q. What utilization factor do AT&T/WorldCom propose for RT common electronics?

A. AT&T/WorldCom propose using an 80% utilization factor for RT common electronics.[124/]

Q. Is this proposed utilization factor reasonable in a forward-looking network?

A. No. As with AT&T/WorldCom's proposed utilization factor for RT plug-ins, the proposed 80% utilization factor fails to reflect administrative spare requirements, demand growth during the relief planning period, and the effects of churn and breakage. As explained in the Verizon Panel Direct, industry operating experience has established that DLC systems operate

---

[124/] AT&T/WorldCom Rebuttal Panel at 70.

most efficiently with an administrative spare margin of 10% of installed RT common electronics capacity. Thus, 90% utilization would be the maximum RT common electronics utilization that should be experienced on any fiber-fed DLC route. Efficient engineering practices further call for installing enough spare capacity in addition to the administrative spare to accommodate three years of demand growth. This is explicit in Verizon's Engineering Guidelines: "The years of relief provided by a loop electronics solution will vary depending on the growth rate and technology used. The relief period for the hardware, shelves and/or channel banks and common plug-ins is three years. Terminate facilities, so that at the end of three years the fill level will be 90%."[125/] Thus, assuming annual line growth of 3%, the RT common electronics utilization should be 81% at the time of installation or augmentation of the RT.

Actual utilization in a real network would be further reduced by the effects of breakage and customer churn. In most cases, RT common electronics are most efficiently installed in capacity units that accommodate 224 POTS lines; the impact of breakage is simple to illustrate: For example, consider a typical size RT with 672 lines (three 224 shelves). A relief shelf should be planned to be available when the working circuits are forecasted to reach 605 (90%). At installation of the

---

[125/] *See* Engineering Guidelines at 16.

relief shelf, the common fill will be reduced to 605/896=67.5%. Using smaller RT units that accommodate 96 or fewer lines to address this problem, as AT&T/WorldCom propose[126/] would be cost-effective only in the very small fraction of Verizon VA's feeder routes that serve and are expected to serve a very small number of subscriber lines. In all other cases, the 224 line shelf units are more cost-effective to install, even if they produce higher spare capacity; they also eliminate the need to provision spare again, more quickly. This is not a result of "embedded" network assumptions, as AT&T/WorldCom argue,[127/] but the result of using actual customer locations that cannot simply be assumed away to satisfy AT&T/WorldCom's hypothetical network needs.

Q. Should the utilization rate for RT common electronics be higher than for copper feeder, as AT&T/WorldCom contend? [AT&T/WorldCom Rebuttal Panel at 68.]

A. No. As explained in the Verizon Panel Direct, RT common electronics and copper feeder facilities share several significant characteristics that produce comparable utilization factors for each. These characteristics include the nature of demand served by each type of facility, the engineering lead time required to install additional units of capacity, and the effects of breakage on the capacity planning process. For these

---

126/ AT&T/WorldCom Rebuttal Panel at 70.
127/ AT&T/WorldCom Rebuttal Panel at 69.

reasons, RT common electronics and copper feeder facilities experience very similar utilization rates in practice, and it is reasonable to assume that this would continue in a forward-looking network.

Q. AT&T/WorldCom allege that Verizon VA's utilization factor for RT common equipment fails to account for services other than POTs services, and that including such services would have increased utilization. Please respond. [AT&T/WorldCom Rebuttal Panel at 68-69.]

A. This allegation is completely erroneous. As shown in Attachment L, which consists of screen snapshots from LCAM, Verizon VA's utilization factor accounts for all services that can be provided through RT common electronics.

Q. What is your recommendation with respect to RT common electronics utilization?

A. The Commission should adopt Verizon VA's rate of **[VERIZON PROPRIETARY BEGINS] [VERIZON PROPRIETARY ENDS]**, which conservatively accounts for all elements that impact utilization.

6. Conduit Utilization

Q. What are AT&T/WorldCom's contentions with respect to Verizon VA's [VERIZON PROPRIETARY BEGINS] [VERIZON PROPRIETARY ENDS] duct utilization factor?

A. AT&T/WorldCom contend that it is inappropriate to apply such a conduit utilization factor because this utilization factor reflects an unnecessarily high amount of spare duct capacity. AT&T/WorldCom's proposed remedy is to eliminate application of this utilization factor entirely and recalculate the per-foot investment by taking Verizon VA's per-foot investment for installed ducts and adding $0.72 per foot, which AT&T/WorldCom claim represent the material-only investment for an additional spare foot of 4-inch duct.[128/]

Q. Do you agree with AT&T/WorldCom's claim that Verizon VA's conduit utilization factor is "substantially inflate[d]"? [AT&T/WorldCom Rebuttal Panel at 71.]

A. No. Verizon VA's conduit utilization factor is an appropriate, forward-looking factor that reflects Verizon VA's experience with the realities of installing conduit. Specifically, the primary driver of conduit costs is the cost of digging a trench. Once a trench has been opened, the incremental costs of installing additional ducts are negligible. Because it is so costly to open a new trench to install additional ducts, and because municipalities discourage repeated excavations, it is far more efficient and appropriate to

---

[128/] AT&T/WorldCom Rebuttal Panel at 73.

install sufficient duct capacity at that time to accommodate the growth needs for the life of the plant than it is to repeatedly re-dig trenches every few years to install additional duct capacity. Moreover, it is not possible to install additional fiber cables in ducts that are already occupied, because the friction that would be created as the new cable is dragged through the duct against the existing cable would likely damage the protective sheathing of the cables. And upgrading the throughput of fiber capacity in conduit is not a substitute for spare conduit: Quite simply, a spare duct is necessary if the existing duct fails or floods or if for any reason there is a need to pull in another cable in an emergency. Nor, in reality, is fiber capacity infinitely expandable. For example, at a certain point the fixed capacity of the RT unit will be reached and a new RT would have to be added; similarly; an OC3 ring cannot be upgraded to an OC12 ring while the fiber is in service. AT&T/WorldCom fail even to acknowledge these issues. Clearly, efficient network design calls for installing sufficient duct capacity during the initial installation to avoid the need to install additional ducts during the life of the plant.

Q. Does AT&T/WorldCom's proposed remedy provide a reasonable estimate of conduit investment?

A. No. AT&T/WorldCom's proposed remedy defies logic and produces a substantial understatement of even the investment associated with the inefficiently small four-duct trench construct that AT&T advocates.

To develop its remedy, AT&T/WorldCom selected Verizon VA's conduit investment per duct foot from a single year, and not surprisingly, AT&T/WorldCom selected the year (1998) with the lowest investment per duct foot ($12.82, when brought to 2001 levels using the Turner TPI inflation factor instead of Verizon VA's own TPI). AT&T/WorldCom then added $0.72 per foot to represent the materials-only price of an additional duct.[129/] AT&T/WorldCom reduce investment per duct foot by 49.95% to reflect its unsupported estimates of conduit sharing to arrive at an investment per duct foot of $6.78.

AT&T/WorldCom's proposed remedy ignores the fact that trenching costs vary only marginally, if at all, with a small incremental change in the number of ducts installed in a trench, as explained above. Thus, even if one were to credit AT&T/WorldCom's proposal that only four-duct conduit should be used, the only change one should expect to see is a slight reduction with respect to the material investment associated with those spare ducts in Verizon VA's model that AT&T/WorldCom deem to be unnecessary. In fact, if that calculation is made,

---

[129/] AT&T/WorldCom Rebuttal Panel at 73. Apparently, AT&T/WorldCom's calculations failed to follow even their own proposed remedy, which called for adding one spare duct for each conduit section (consisting of three occupied ducts). Attachment L is the AT&T/WorldCom worksheet showing that AT&T may have inadvertently calculated the material price for one spare duct for each occupied duct. Nevertheless, the remainder of AT&T's calculations unjustifiably reduce conduit investment dramatically.

AT&T/WorldCom's proposed four-duct conduit section would produce less than a 1% reduction in the costs associated with Verizon VA's configuration. This minimal effect is illustrated in Table 4, below.

TABLE 4

Description	Value	Source
1. Avg. ducts per trench	5.28	Loop Common Inputs, tab 5.1, p.14 line 2
2. Conduit fill factor	0.57	Loop Common Inputs, tab 5.1, p.14 line 1
3. Investment per duct foot	$18.88	Loop Common Inputs, tab 3.1, p.1
4. Avg. number of occupied ducts	3.00	Line 1 x Line 2
5. Investment per trench foot	$99.69	Line 1 x Line 3
6. Investment per occupied duct	$33.12	Line 5 / Line 4 (same result as Line 3 / Line 2)
7. Material-only investment per duct foot	$0.72	AT&T/WorldCom Panel Rebuttal at 73
8. Total number of proposed ducts per conduit section in revised configuration	4	Line 4 + 1 duct
9. Total number of "excess" ducts per conduit section in original configuration	1.28	Line 1 — Line 7
10. Total material-only savings from eliminating "excess" ducts	$0.92	Line 7 x Line 9
11. Revised investment per trench for revised configuration	$98.77	Line 5 — Line 10
12. Investment per occupied duct in revised configuration	$32.92	Line 10 / Line 4
13. Savings from revised configuration	$0.20 (0.6%)	Line 6 — Line 11 ($0.20 / Line 6)

Q. Is there any support for AT&T/WorldCom's contention that Verizon VA has overstated the amount of underground plant in its network and has thus overstated the amount of conduit needed?
[AT&T/WorldCom Rebuttal Panel at 74.]

A. No. The prevalence of underground cable that is used in the LCAM model comes from the engineering survey of Verizon's Virginia network discussed above. The amount of distribution plant that is placed in underground conduit according to that engineering survey reflects the use of underground distribution in certain urban areas in Verizon VA's network, such as Arlington and Alexandria. Of course, even this amounts to only a small portion of the total amount of distribution cable in the Virginia network. By AT&T/WorldCom's own account, that figure is approximately **[VERIZON PROPRIETARY BEGINS] [VERIZON PROPRIETARY ENDS].**[130/] It is puzzling that AT&T/WorldCom believe this is inconsistent with there being "'very, very little' underground cable in the distribution portion of the plant" in another Verizon state.[131/]

Q. Is there any basis for further reducing Verizon VA's conduit investment to account for shared conduit?

130/ *Id.* at 74.

131/ *Id.* at 74 (quoting New Jersey Board of Public Utilities Docket no. TO00060356); (January 3, 2001) (transcript of Marsha S. Prosini and Donald E. Albert at page 2162).

A. No. In Verizon VA's extensive experience installing conduit in Virginia, there have been only limited opportunities to share trenching costs with other utilities such as cable and power providers. Verizon VA's loop costs already account for both types of sharing arrangements that have been reached. The first type of arrangement is one in which Verizon VA and another company share the cost of trenching so that both can place their facilities (which may include conduit or merely buried cable) in the same trench. In those cases, Verizon VA's investment level reflects only the portion of trenching costs that Verizon VA has paid. The second type of arrangement is one in which Verizon VA leases to another company (such as a cable TV company) an already-installed duct. In those cases, Verizon VA's conduit utilization factor treats those leased ducts as occupied. Thus, application of the conduit utilization factor to investment per installed duct foot does not result in recovering the investment for such ducts through Verizon VA's UNE rates. This is shown in Verizon VA's conduit utilization workpapers provided on CD#1, in the VA Unbundled Loop folder, Section 5.1 of the Subfolder - Common Inputs.

Q. AT&T/WorldCom argues that Verizon VA's cost should reflect an average of 3-way sharing of buried trench. Should this adjustment be made?

A. No. Verizon VA has not found 3-way sharing to be common, nor is there any reason to believe either that Verizon VA's experience is unique or is

likely to change in the forward-looking network. In fact, when AT&T/WorldCom were asked to provide their own data regarding such sharing agreements in the Commonwealth of Virginia, they avoided answering the question, noting non-responsively that they had no sharing agreements with Verizon VA.[132/]

Q. So should the Commission adjust Verizon VA's conduit utilization factors, as AT&T/WorldCom propose?

A. No; there is no basis for such an adjustment.

Q. Does this conclude the Panel's testimony concerning Verizon VA's loop costs?

A. Yes it does; as we have shown, the costs are forward-looking, the underlying data is reliable and the only concrete, Virginia-specific data that has been submitted in these proceedings and the fill factors are appropriate and indeed necessary to serve the forward-looking network in the Commonwealth.

[132/] AT&T/WorldCom Response to Verizon VA 13-133 (seeking "all agreements relating to the sharing of trenches in Virginia during the last 5 years and to which AT&T or WorldCom has been a party"). (Attachment A.)